

Pre-Feasibility Study

Tomato Paste

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INTRODUCTION:

This pre-feasibility study has been conducted by PAMCO to investigate the possibility of establishing a commercially viable processing unit by the private sector. The aim of this pre-feasibility report is to establish the main parameters for conducting a detailed financial feasibility study with the collaboration of the private sector. PAMCO is soliciting expressions of interest from the private sector for investment in this project. This report provides a basis for the private sector to make serious investigation into setting up the project.

Potential investors are invited by PAMCO to open a dialogue with PAMCO for the preparation of this project feasibility on cost sharing basis. PAMCO is prepared to assist the private sector in various ways, ranging from financial to non-financial support, in line with its Business Engagement Policy.

We welcome inquiries from the private sector. PAMCO is ready to provide any assistance which will enable the private sector to make profitable investments in agribusiness.

BACKGROUND:

Pakistan produces several high value agricultural products with great marketing potential. However, due to their perishability and seasonal production, this potential remains unutilized. Punjab AgriMarketing Company, setup by the Government of Punjab under the Public-Private partnership scheme is developing projects which are designed to remove supply side constraints in the marketing of these commodities while adding value to the basic raw material.

Marketing, distribution, and consumption of fresh tomatoes have several difficulties. Tomato Paste provides a way out with extremely positive outcome both commercially and financially. Indeed, tomato consumption by the food processing industry revolves around the availability of user friendly intermediate products like tomato paste, puree, ketchup and sauces.

This pre-feasibility study is designed to capture the five main criteria for successful marketing.

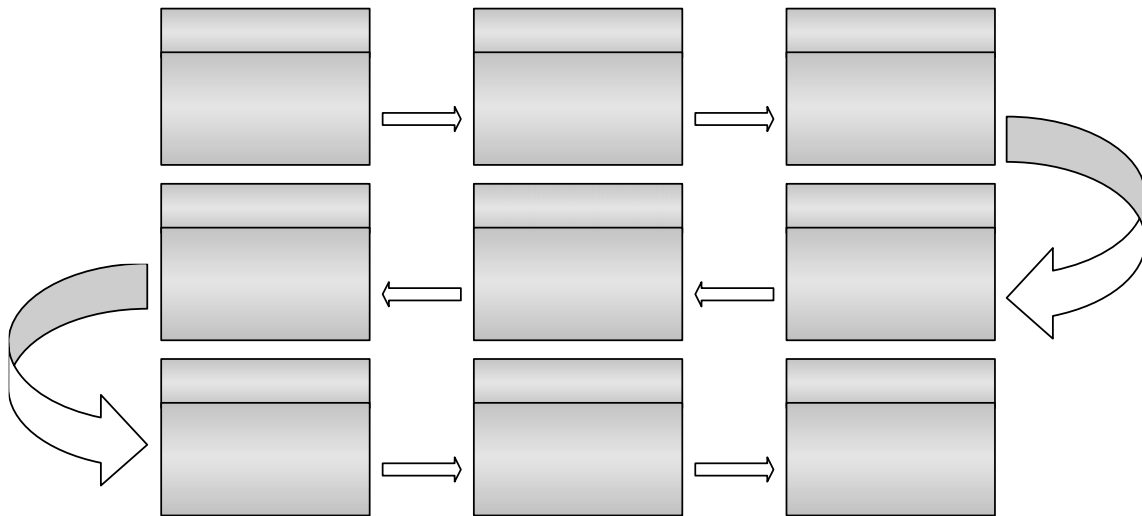
- Price and availability of raw material
- Cost of conversion
- Price competitiveness
- Sources of demand
- Quality and taste

PRODUCTS:

- Major products of processed tomatoes include tomato paste, puree, tomato sauces, ketchup, whole canned tomatoes and juices.
- Tomato paste is the main product of processed tomatoes which is used as a raw material to make ketchup, sauces and other tomato related products.
- Processors of tomato paste usually sell to re-packaging companies which add different additives to make specialized retail products such as ketchup, sauces and juices.
- Tomato paste is also used as tomato substitute in restaurants, hotels and individual households.

PROCESS:

- Production process involves washing, sorting, crushing, preheating, pulping, evaporation, preparing paste, aseptic filling, and storing.



- It takes 6kg fresh tomatoes to produce one kilo tomato paste of 28-30% BRIX. To produce one kilo tomato paste of 36% BRIX will require 7kg fresh tomatoes.
- Depending on customers' requirements, there are two methods to produce final product – *Hot-Break and Cold-Break. Hot-Break is considered a better method because it gives better yield and aroma.

*Cold break (CB): tomato heated to about 66°C; color and flavor is preserved -> juice

Hot break (HB): tomato heated to about 100°C; pectin is preserved -> thicker -> ketchup

Source: Wikipedia

MARKETS:

Export Markets:

- The global export of tomato paste was \$1.73 billion in 2004, a growth of 39 percent compared to 2000 level.
- In terms of volume, world export was 2.20 million tonnes in 2004, a growth of 25.78 percent compared to 2000 level.
- Top eight countries accounted for 85 percent of total world export.
- Italy is the biggest exporter followed by China, Turkey, Spain and USA. China has increased its production by many folds in recent years thanks to massive investment in this industry.

	Tomato Paste Exports - Qty (Mt)				
	Year				
	2000	2001	2002	2003	2004
Italy	561,059	611,228	657,218	589,899	752,963
China	156,238	298,374	373,519	401,402	437,398
Turkey	172,692	123,353	113,516	149,790	183,254
Spain	79,911	76,232	124,849	162,385	151,983
USA	97,327	108,191	115,206	144,295	146,845
Portugal	121,010	114,097	117,537	149,220	136,429
Chile	92,991	130,885	100,120	75,412	73,445
Greece	104,331	116,285	101,791	81,396	64,128
Others	248,353	220,601	230,613	287,642	255,044
Total	1,633,912	1,799,246	1,934,369	2,041,441	2,201,489

	Tomato Paste Exports - Val (1000\$)				
	Year				
	2000	2001	2002	2003	2004
Italy	360,173	378,665	468,063	509,572	717,890
China	69,877	117,813	188,668	205,036	223,363
Spain	76,869	64,197	105,247	149,827	160,399
Turkey	92,499	74,933	70,522	100,228	133,770
Portugal	77,303	65,704	73,520	105,968	104,111
USA	73,008	79,704	82,812	95,011	100,011
Greece	65,730	68,166	74,912	58,011	54,498
Chile	57,558	72,635	56,247	47,318	51,507
Others	187,656	150,030	161,695	201,400	189,440
Total	1,060,673	1,071,847	1,281,686	1,472,371	1,734,989

Source: FAOSTAT data, 2006

Import Markets:

- In 2004, the biggest importer was Italy, followed by Germany, Russian Federation, Japan, and UK and the top eight countries accounted for 52 percent of total world imports.
- Italy is not only the top exporter but it is also the top importer of tomato paste. It imports a big quantity from China, re-packs the paste and sells most to Africa and Middle East.

	Tomato Paste Imports - Qty (Mt)				
	Year				
	2000	2001	2002	2003	2004
Italy	123,483	108,616	158,668	182,620	346,947
Germany	138,825	153,159	182,007	177,960	171,608
Russian Federation	109,077	111,104	100,625	103,629	121,118
Japan	108,367	107,835	92,720	96,597	105,419
United Kingdom	108,026	108,852	105,084	183,739	104,937
France	85,976	78,617	77,496	85,219	99,432
Ghana	13,051	16,152	24,077	31,085	64,810
Canada	47,819	54,115	50,660	43,391	59,290
Others	684,624	786,922	858,293	809,015	992,980
Total	1,419,248	1,525,372	1,649,630	1,713,255	2,066,541

	Tomato Paste Imports - Val (1000\$)				
	Year				
	2000	2001	2002	2003	2004
Italy	58,262	44,374	82,984	110,496	198,089
Germany	91,237	94,835	118,453	147,485	156,607
United Kingdom	89,773	76,699	78,456	97,913	98,792
Japan	93,725	85,626	74,902	80,165	91,843
France	51,910	43,053	47,536	65,592	79,668
Ghana	11,060	11,471	17,550	34,049	68,500
Nigeria	14,400	21,100	29,811	58,100	66,976
Russian Federation	40,203	33,139	32,850	34,936	40,597
Others	500,521	485,189	562,804	585,111	799,282
Total	951,091	895,486	1,045,346	1,213,847	1,600,354

INTERNATIONAL MARKET PRICE:

- China's tomato paste is sold at the lowest price in the international market. Chinese industry is young and it is mainly targeting price sensitive markets.
- European producers are facing tough competition from Chinese exporters. Last year, European Union paid €34.5/tonne in subsidy to European producers which helped them to compete with Chinese producers of paste.
- The price of Turkish's tomato paste is very high because its producers are not aided by subsidies and they do not sell it below cost like Chinese companies. Although, they are losing the market share at the lower end but quality and taste conscious consumers still prefer their products.

Year 2006		
Origin	28/30CB	36/38CB
Italy	\$0.61	\$0.75
Spain	\$0.58	\$0.73
Portugal	\$0.61	\$0.76
Greece	\$0.61	\$0.75
China	\$0.51	\$0.56
Turkey	\$0.75	\$0.85

Year 2005			
Origin	28/30CB	28/30HB	36/38CB
Italy	\$0.58	\$0.60	\$0.74
Spain	\$0.53	\$0.53	\$0.71
Portugal	\$0.58		\$0.77
Greece	\$0.55		\$0.72
China	\$0.51	\$0.51	\$0.55
Turkey	\$0.67	\$0.58	\$0.83

Note: All following prices are given on Ex-factory basis for Italy, Greece, Spain, or Portugal while prices for China and Turkey are FOB

RAW MATERIAL:

- Pakistan produced 306,209 tonnes tomatoes in 2002-03. It is grown throughout the Pakistan and N.W.F.P. is the main growing province which produced 48% of total national production in 2002-03.

Production of Tomatoes (Tonnes)			
	2000-01	2001-02	2002-03
Punjab	60,752	62,226	65,199
Sindh	32,930	32,838	35,011
N.W.F.P.	139,993	146,207	148,274
Balochistan	35,080	52,841	57,806
Total	268,755	294,112	306,290

- The following table shows district-wise production of tomatoes and the main growing districts are Swat, Killa Saifullah, Sheikhpura and Malakand.

District-Wise Production of Tomatoes (Tonnes)			
	2000-01	2001-02	2002-03
Swat	61,607	61,753	63,211
Killa Saifullah	5,351	26,425	26,276
Sheikhpura	16,754	17,571	17,571
Malakand	12,268	11,895	12,268
S.W	9,130	9,135	9,205
Badin	6,265	7,885	8,939
Charsadda	1,838	1,956	8,143
Gujranwala	6,131	6,756	7,119
Others	149,411	150,736	153,558
Total	268,755	294,112	306,290

http://www.pakistan.gov.pk/divisions/food-division/media/table39_tomato.pdf

- Fresh tomatoes are available almost throughout the year in Pakistan. The following table shows the arrival period of the fresh tomato crop in different parts of Pakistan.

Availability of Fresh Tomatoes												
Province	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Balochistan (Kharif)												
Balochistan (Rabi)												
NWFP (Kharif)												
NWFP (Rabi)												
Punjab												
Sindh												

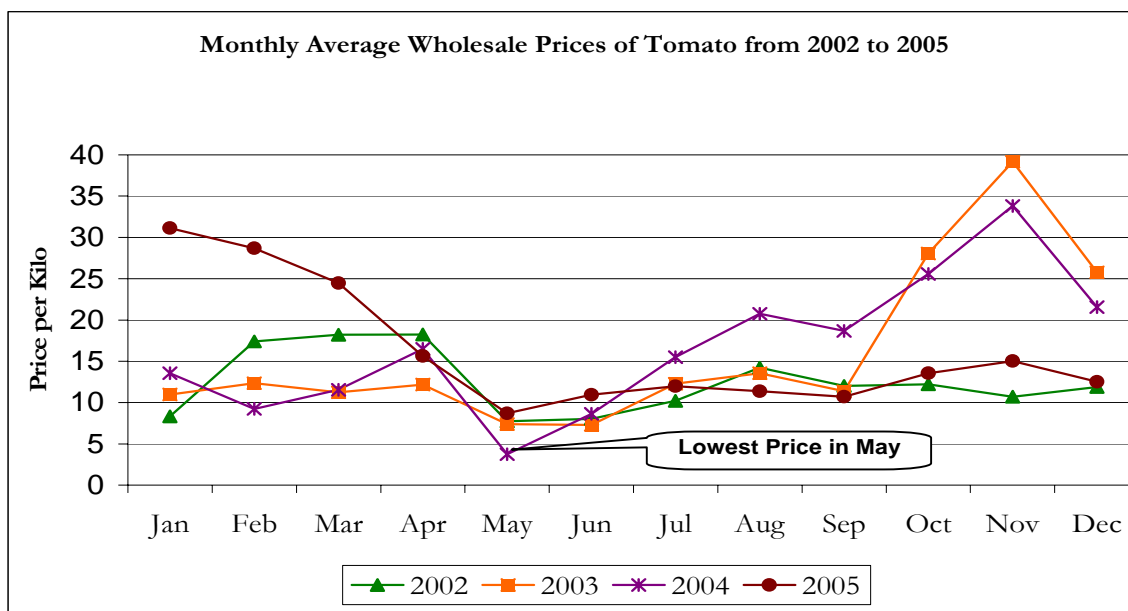
Source: <http://punjabagmarket.info/>

- This table illustrates the monthly historical whole-sale prices of tomatoes in selected markets of Pakistan.

Monthly Whole-Sale Prices of Tomatoes in Selected Markets (Rs./40KG)												
Year/Market	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lahore												
2003	305	362	375	416	269	181	447	462	309	885	1314	1155
2004	500	330	466	614	121	295	606	527	571	1020	-	-
2005	Not Available											
Hyderabad												
2003	147	155	245	182	179	248	328	253	196	702	1133	507
2004	285	96	169	298	146	350	398	340	316	337	-	-
2005	428	476	612	531	238	561	333	188	212	356	-	-
Peshawar												
2003	358	293	350	408	268	168	268	318	313	722	1128	769
2004	603	399	236	523	343	158	405	702	737	881	-	-
2005	507	988	1005	756	850	320	360	435	353	240	-	-
Quetta												
2003	336	286	263	219	285	341	319	292	194	595	1122	1005
2004	572	368	514	490	270	455	610	455	490	757	-	-
2005	657	-	-	-	650	695	395	387	265	230	-	-

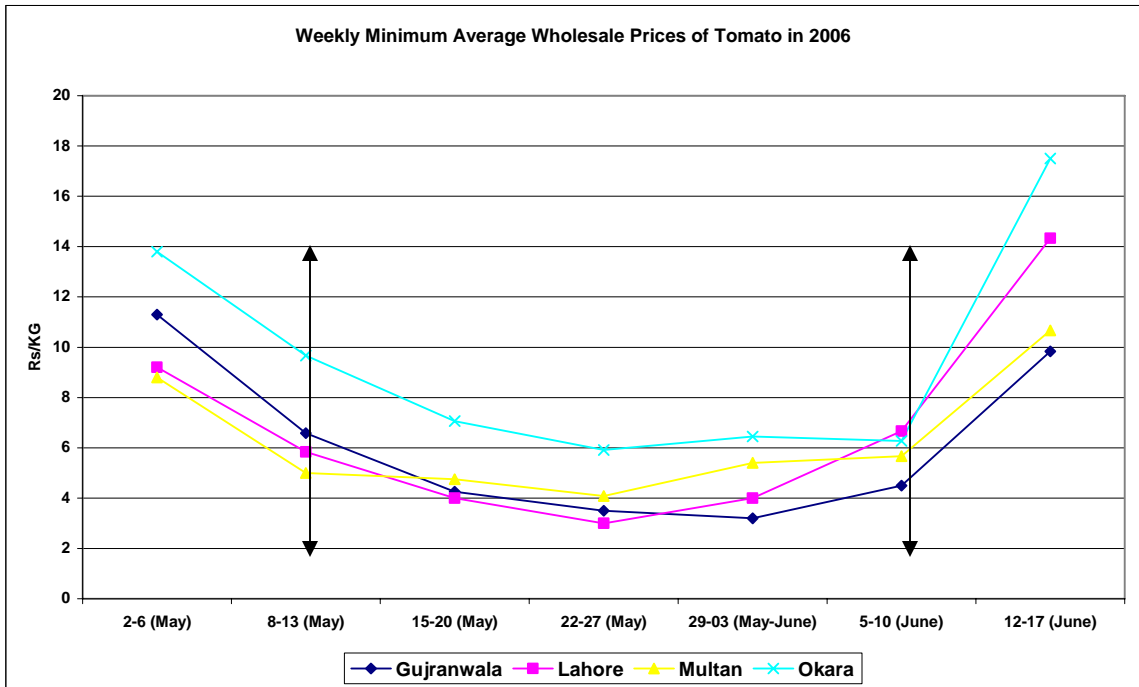
Source: <http://www.pakistan.gov.pk/divisions/food-division/media/T22.pdf>

- This graph shows the monthly average wholesale prices of tomato in Punjab. Wholesale prices of unsorted tomatoes are lowest in May. Grade c and d tomato prices will be much lower which are used to make tomato paste.



Source: <http://punjabagmarket.info/>

- This graph shows the weekly average wholesale prices of tomato in selected markets of Punjab in month of May and June. Punjab farmers harvested bumper crop of tomato this season. According to our survey, local manufactures of tomato paste paid less than 3 rupees for one kg of fresh tomato this year. According to this graph, a producer has a window of 4 weeks to purchase fresh tomato at lowest price.



LOCAL MARKET:

- There are some companies in Pakistan which are making tomato paste and selling it to re-packaging companies which add different additives like vinegar, sugar, salt and spices to make specialized retail products such as ketchup, sauces and juices.
- Local production of tomato paste is not enough to meet local demand and some companies are importing it from other countries especially from UAE, China and Turkey to fill in the supply and demand gap.
- The following table shows the imports of tomato paste for the last three years. 2005 data shows more than 100% growth rate in term of both value and quantity.

Tomato Paste Imports			
Year	Assessed Value	Assessed Quantity (KG)	Avg. Price/KG (Rs.)
2003	4,080,097	115,113	35.44
2004	13,645,395	368,901	36.99
2005	30,363,272	814,586	37.27

Source: Customs

- In 2005, the largest quantity of tomato paste was imported from China, followed by Turkey, UAE and Italy. In term of quantity, 89% paste was imported from China.

Country	Assessed Value	% of Total Value	Assessed Qty	% of Total Qty
China	24,081,368	79.31%	727,987	89.37%
Turkey	4,659,447	15.35%	65,044	7.98%
UAE	1,514,194	4.99%	20,263	2.49%
Italy	28,501	0.09%	590	0.07%

Source: Customs

- The imported one kilo tomato paste of 28 BRIX costs approximately 49 rupees after adding duties and taxes. The cost breakdown is as under:

	Duty Structure	Value	Running Total
C & F (Rs.)			33.00
Insurance	1.00%	0.33	33.33
Handling Charge	1.00%	0.33	33.66
Custom Duty	25.00%	8.42	42.08
Sales Tax	15.00%	6.31	48.39
Income Tax	6.00%	2.90	51.29
Miscellaneous	5.00%	2.56	53.86

PLANT & EQUIPMENTS:

Local Technology:

Option A:

Multi Products Plant:

- Locally manufactured plant is low-priced and multi products plant which make it possible to run a plant most part of a year. This plant does not include packaging equipments. If a producer wants to export tomato paste, then he has to install an aseptic packaging line.

Description	Unit Price PKR
Sorting conveyor belt	355,000
S.S conveyor belt	185,000
Roller fruit washer	750,000
Belt conveyor	125,000
Elevator	275,000
Fruit crusher	490,000
Fruit finisher	275,000
Fruit pasteurizer	585,000
Mono Pump	270,000
S.S container (100L)	175,000
S.S mixing tank	225,000
Juice evaporator	4,800,000
Total	8,510,000

Option B:

Tomato Paste Plant:

- This plant can produced 10 tonnes of tomatoes paste per day. Prices cover the cost of machinery & equipment, electrification and instrumentation.

Description	Unit Price PKR
Elevator with motor	
Rotary Washer	
Sorting Table	
Chopper	
Tubular Preheater	
Two Stage Pulper Finisher	
Pump with Motor	
Storage Tank	
Pump with Motor	
Concentration Equipment	
Pump with Motor	
Pulp Storage Tank	
Pump with Motor	
Tomato Paste Sterilizer	
Paste Filling Machinery	
Total	23,700,000

European Technology:

Mango, Guava & Tomato Processing Plant:

- The harvesting season of tomato is very short and low-priced tomatoes are only available in May and some time in June, depending on crop size. Hence the processing equipment has to be multi product machinery.
- This is a multi-purpose plant which can process different fruits and vegetables. By installing a multi-purpose line will assure the maximum utilization of this plant.

Description	Price (EURO)	Price (Rs)
Fresh fruit receiving & treatment line	323,700	24,601,200
Enzymatic treatment for guava puree	36,200	2,751,200
Tomato concentration & aseptic filling line	713,000	54,188,000
CIP line	21,400	1,626,400
Laboratory	44,400	3,374,400
Spare parts & assistance to start up	127,800	9,712,800
Total Equipments Cost	1,266,500	96,254,000

Capacity:

Product	Line Input
Mango	2.5 t/h
Guava	1.5 t/h
Tomato	3 t/h
Line output depends on type of raw material	

Note: 1 EURO = 76 Rs

Tomato Processing Plant:

- This plant can only process tomato and it is cheaper than multi-purpose line but its utilization will be low because of short tomato season.

Description	Price (EURO)	Price (Rs)
Receiving & treatment line	191,300	14,538,800
Concentrate Line	267,400	20,322,400
Sterilizing & aseptic line	281,100	21,363,600
Spare parts & assistance to start up	100,000	7,600,000
Total Equipments Cost	839,800	63,824,800

Capacity:

Line input	3 t/h
Line output	Depending on type of raw material

Ketchup Preparation Line:

- Tomato paste is used as a raw material to make tomato ketchup. Companies generally sell the tomato paste in bulk to other companies which make ketchup and sell it to retail market.
- By installing a ketchup line, a manufacturer can add further value to tomato paste and use it to make consumer product like ketchup.

Description	Price (EURO)	Price (Rs)
Ketchup Preparation line	140,000	10,640,000
Ketchup Treatment Line	112,500	8,550,000
Filling Line in Glass Bottles of 330 CC	293,600	22,313,600
Spare parts & assistance to start up	83,300	6,330,800
Total Equipments Cost	629,400	47,834,400

Note: 1 EURO = 76 Rs

NOTE: The project cost will vary depending upon the selection of machinery and its mix between locally produced plant, European plant and other sources like China.

CONCLUSION:

- The prices of tomatoes are lowest in month of May i.e. the average whole sale price of one kilo tomato in 2004 was Rs. 3.74. Grade c and d tomato prices will be even lower which are used to make tomato paste.
- To make one kilo tomato paste of 28-30 BRIX, the fresh tomatoes of grade c and d will cost approximately Rs. 18 (3 x 6) and the cost for one kilo imported tomato paste is Rs. 54 after adding duties and taxes. Therefore, a local manufacturer will have a margin of 67% to cover its other costs and make a reasonable profit.
- The equipment line which is used to make tomato paste can also be used to make fruit pulp i.e. mango, guava, apricot, plum and peach pulp.
- Tomato paste is usually sold in bulk to remanufacturing companies which add different ingredients to make retail products. But if a company installs a bottling line and make consumer products like ketchup and sauces and sell them directly to retail market, they can further increase their profit margin through value addition.
- The food processing industry of Pakistan is growing roughly 10% to 15% annually. Growing popularity of Western-style cuisine, increasing urbanization, growing per capita income, and increasing two-income families are fueling this demand.
- Last year, more than 800 tonnes tomato paste was imported from different countries to meet growing local demand.
- Shelf life of the finished product in normal storage is 18 months which makes it possible to supply the product to consumer during off-season and market it to far-flung areas.